

IN THE CLAIMS:

Please cancel claim 13, without prejudice or disclaimer. Please amend the claims as indicated below. The following listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A heat sink comprising:

a first planar member having ~~an upper face~~ a first main face and second main face,
~~formed with the second main face having a first groove depressed portion thereon;~~

a second planar member having a ~~lower face~~ first main face and a second main face,
~~formed with the first main face having a second groove depressed portion thereof; and~~

A
a partition member sandwiched ~~disposed~~ between ~~said upper~~ the second main face of ~~said~~
the first planar member and said lower the first main face of ~~said~~ the second planar member;
member, and said partition being formed with a hole for communicating a first space and a
second space to each other, said first space being formed by said first groove portion and a lower
face of said partition, said second space being formed by said second groove portion and an
upper face of said partition; said first space being provided with a first connecting member for
connecting a bottom face of said first groove portion and said lower face of partion to each other;
said heat sink further comprising a supply port for supplying a fluid into said first space and a
discharge port for discharging said fluid from said second space a main first face and a main
second face, the partition member having a plurality of holes passing through the first and the
second main faces thereof, each of the plurality of holes having a substantially flat wall extending

from the first main face of the partition member to the second main face of the partition member,
the first main face of the partition member and the first depressed portion defining a first
space having side walls with rounded corner portions at a location proximate the plurality of
holes, the second main face of the partition member and the second depressed portion defining a
second space having side walls with rounded corner portions at a location proximate the plurality
of holes, the holes communicating the first space with the second space with areas in the first
space which correspond to the holes being substantially spatially continuous and free of any
dividing members;

a supply port for supplying a fluid into the second space;

a discharge port for discharging the fluid from the first space; and

a first guide member provided in the second space for controlling flow of the fluid in the
second space from the supply port to an area in the first space corresponding to the holes.

Claim 2 (currently amended): A heat sink according to claim 1, wherein a plurality of ~~said the first connecting guide members are~~ is provided.

Claim 3 (currently amended): A heat sink according to claim 1, wherein ~~said the first connector guide member~~ has a substantially circular cross section.

Claim 4 (currently amended): A heat sink according to claim 1, wherein ~~said the first connecting guide member~~ has a cross section whose length in a first direction from ~~said the~~ supply port to ~~said hole~~ the holes is longer than the length in a second direction substantially perpendicular to ~~said the~~ first direction, said the cross section being shaped like a curve on ~~said the~~ supply port side.

Claim 5 (currently amended): A heat sink according to claim 4, wherein ~~said~~ the first ~~connecting guide~~ member has a substantially elliptical cross section.

Claim 6 (currently amended): A heat sink according to claim 1, ~~wherein further~~ comprising a second connecting guide member for connecting a bottom face of said second groove portion and said upper face of partition to each other is disposed in said second space provided in the first space for controlling flow from the areas corresponding to the holes to the discharge port in the first space.

Claim 7 (currently amended): A heat sink according claim 6, wherein a plurality of ~~said~~ the second ~~connecting guide~~ members ~~are~~ is provided.

Claim 8 (currently amended): A heat sink according to claim 6, wherein ~~said~~ the second ~~connecting guide~~ member has a substantially circular cross section.

Claim 9 (currently amended): A heat sink according to claim 6, wherein ~~said~~ the second ~~connecting guide~~ member has a cross section whose length in a third direction from ~~said hole~~ the holes to ~~said~~ the discharge port is longer than the length in a fourth direction substantially perpendicular to ~~said~~ the third direction, ~~said~~ the cross section being shaped like a curve on ~~said~~ the hole side.

Claim 10 (currently amended): A heat sink according to claim 9, wherein ~~said~~ the second ~~connecting guide~~ member has a substantially elliptical cross section.

Claim 11 (currently amended): A heat sink according to claim 6, wherein said first and second ~~connecting guide~~ members disposed at a part where ~~said~~ the first and second spaces overlap each other are located at respective positions overlapping each other.

Claim 12 (currently amended): A heat sink according to claim 1, wherein ~~an upper~~ the
first main face of ~~said~~ the second planar member has a heating element mounting area for
mounting a heating element to be cooled,

~~said hole~~ the holes being disposed ~~at a position~~ opposing ~~said~~ the heating element
mounting area.

Claim 13 (cancelled).

Claim 14 (original): A heat sink according to claim 1, wherein ~~said hole~~ each of the holes
has a sufficiently small cross section for injecting said fluid into ~~said second~~ the first space.

Claim 15 (original): A semiconductor laser apparatus comprising:

the heat sink according to claim 1, and

a semiconductor laser mounted on an upper face of said second planar member of said
heat sink.

Claim 16 (original): A semiconductor laser apparatus according to claim 15, wherein said
semiconductor laser has a plurality of laser emission points arranged in a predetermined
direction,

said predetermined direction being oriented so as to become substantially parallel to said
upper face of second planar member.

Claim 17 (original): A semiconductor laser stack apparatus comprising first and second
heat sinks and first and second semiconductor lasers;

the first and second heat sinks being the heat sink according to claim 1;

the first semiconductor laser being held between an upper face of the second planar member of the first heat sink and a lower face of the first planar member of the second heat sink;

the second semiconductor laser being mounted on said upper face of second planar member of said second heat sink.

Claim 18 (original): A semiconductor laser stack apparatus according to claim 17, wherein the first and second semiconductor lasers have a plurality of laser emission points arranged in a predetermined direction, said predetermined direction being oriented so as to become substantially parallel to said upper faces of first and second planar members.

AA Claim 19 (original): A semiconductor laser stack apparatus according to claim 17, further comprising:

a supply tube connected to both of said supply port of said first heat sink and said supply port of said second heat sink; and

a discharge tube connected to both of said discharge port of said first heat sink and said discharge port of said second heat sink.

Claim 20 (new): A heat sink comprising:

an integrally formed first planar member having a first main face and a second main face, the second main face having a first groove portion formed therein which extends only part of the way through the first planar in a direction from the second main face toward the first main face;

an integrally formed second planar member having a first main face and a second main face, the first main face of the second planar member having a second groove portion formed therein which extends only part of the way through the second planar member in a direction from

the first main face of the second planar member to the second main face of the second planar member;

A a planar partition member having a first main face and a second main face positioned between the second main face of the first planar member and the first main face of the second planar member, the partition member having a hole passing through the first and second main faces of the partition member, wherein the first groove portion of the first planar member and the first main face of the planar partition member form a first space, the second groove portion of the second planar member and the second main face of the planar partition member form a second space, and the hole in the planar partition member communicates the first space with the second space;

a supply port for supplying a fluid into one of the first and second spaces; and

a discharge port for discharging the fluid from the other of the first and second spaces.

Claim 21 (new): The heat sink according to claim 1, wherein at least one of the first and second spaces is bounded by side walls having rounded corner portions at a location proximate the hole in the planar partition member.